PATENT ABSTRACTS OF JAPAN

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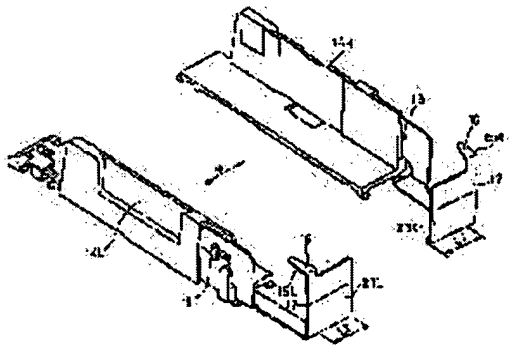
(71)Applicant : TEC CORP

(72)Inventor : KAWAHIRA MASAYOSHI

(54) PAPER SHEET CASSETTE

(57)Abstract:

PURPOSE: To set paper sheets in a cassette without damaging the foremost end corner of paper sheets by moving a paper sheet tip guide corresponding to the movement of a paper sheet width guide when the distance between a paper sheet width guide members is regulated in their positions from the distance corresponding to the maximum width paper sheet size.



CONSTITUTION: At a tip of each paper sheet width guide 14L, 14R a separation pawl 15L or 15R is set through a stud 17, and paper sheet end guide 21L or 21R is arranged integratedly with the guide 15L or 15R. The distance between the guides 14L, 14R is controlled so that its maximum become the width of maximum width paper sheet. On a paper sheet placing board between both guides 14L, 14R paper sheets are placed so that the end of paper sheet may be brought into contact with each guide 21L, 21R. The distance between the guides 14L, 14R is narrowed to control the width direction position of paper sheets. The end corner of paper sheets is controlled in position by means of the guides 21L, 21R. It is thus possible to prevent the paper sheet end corner parts from being damaged by the separation pawls 15L, 15R.

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[Date of requesting appeal against examiner's decision of rejection]

[Date of extinction of right]

* NOTICES *

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CLAIMS

[Claim(s)]
[Claim 1] A form installation board A form width-of-face guide which is the pair which can location regulate a both-sides edge of a form which was prepared crosswise [form] possible [approach and isolation], and was laid on a form installation board It is attached in each form width-of-face guide, and it engages with the point-angle section of a form, and is a separation pawl disengageable at a time to one sheet about a form at the time of feeding. Are the sheet paper cassette equipped with the above, and a form tip guide which can location regulate said form tip is prepared in the start section of each of said separation pawl at one. When a gap of each of said form width-of-face guide which corresponds this form tip guide is narrowed from an equivalent for a width-of-face size of a maximum width form and location regulation of the both-sides edge of the minimum width-of-face form is carried out, it is characterized by forming so that it may have form cross direction length which ****s in movement magnitude of each form width-of-face guide concerned.
[Claim 2] A form installation board A form width-of-face guide which is the pair which can location regulate a both-sides edge of a form which one side was fixed to a main part of a cassette, and another side was prepared crosswise [form] movable, and was laid on a form installation board It is attached in each form width-of-face guide, and it engages with the point-angle section of a form, and is a separation pawl disengageable at a time to one sheet about a form at the time of feeding. In the start section of said separation pawl which is the sheet paper cassette equipped with the above, and was attached in a form width-of-face guide of said another side A form tip guide which can location regulate a form tip is prepared in one. This form tip guide A form width-of-face guide of said another side Form cross direction length which ****s in movement magnitude of a form width-of-face guide of the another side concerned when it is made to move crosswise [form] from a location distant from one [said] form width-of-face guide by width-of-face size of a maximum width form and a crosswise location of the minimum width-of-face form is regulated between concerned one form width-of-face guides It is characterized by forming so that it may have.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to a suitable sheet paper cassette to apply to image formation equipments, such as a laser beam printer and a copying machine.
[0002]
[Description of the Prior Art] The conventional configuration of the sheet paper cassette of pin center,large reference systems is shown in drawing 5 and drawing 6 . In drawing, 10 is a main part of a cassette and two or more sheets of forms are formed possible [a set]. The form installation board 11, the form width-of-face guide (14L, 14R), the separation pawl (15L, 15R), and the form back end guide 19 grade are prepared in this main part 10 of a cassette. In here, the form installation board 11 is formed possible [installation of two or more sheets of forms], and is formed free [rotation] through the pivot 12. This form installation board 11 is energized with the pressurization spring 13, and is energized towards each tip engagement section 16 of a separation pawl (15L, 15R).
[0003] Moreover, as for the form laid on the form installation board 11, a crosswise location (longitudinal-direction location in drawing 5) is regulated with the form width-of-face guide (14L, 14R) of a pair. The paper width guide in two ways (14L, 14R) is prepared crosswise [form] (the direction of arrow head w) possible [approach and isolation] only for the amount of the same length according to the well-known rack-and-pinion device (illustration abbreviation). Moreover, a separation pawl (15L, 15R) has the tip engagement section 16 which carries out contact engagement with the point-angle section of the top form of the two or more forms on the form installation board 11, and it forms two or more forms in one sheet at a time disengageable at the time of feeding. Specifically, the separation pawl (15L, 15R) is attached in the corresponding form width-of-face guide (14L, 14R) rotatable through the stud 18.
[0004] Moreover, the form back end guide 19 carries out location regulation of the back end of the form laid on the form installation board 11, and is prepared possible [modification of the longitudinal direction location of the main part 10 of a cassette] according to the paper size.
[0005] In setting a form to the main part 10 of a cassette, while adjusting the gap of the paper width guide in two ways (14L, 14R) beforehand according to the size (a width-of-face size, length size) of the form concerned, the attaching position of the form back end guide 19 is adjusted. Next, it lays on the form installation board 11, aligning a form carefully with each guide (14L, 14R, 19), and you push the form point-angle section from the upper part of a separation pawl (15L, 15R), and make it located under each tip engagement section 16 of the separation pawl (15L, 15R) concerned.
[0006] In this way, when equipping with and feeding the sheet paper cassette to which the form was set to image equipment, among two or more forms laid on the form installation board 11, delivery energization is carried out with the feed roller (illustration abbreviation) by which the pressure welding was carried out, by the separation pawl (15L, 15R), it dissociates with the 2nd [or less] form, and the top form is sent out.
[0007]
[Problem(s) to be Solved by the Invention] By the way, in the above-mentioned sheet paper cassette, when the point-angle section of the form laid on the form installation board 11 is pushed from the upper part of a separation pawl (15L, 15R) and it locates it under each tip engagement section 16 of the separation pawl (15L, 15R) concerned, the point-angle section of a form bends or a blemish tends to be attached. A jam etc. may be generated in case paper is originated and fed to damage on the point-angle section of this form etc. Moreover, that the point-angle section of a form carries out damage etc. also becomes spoiling the fine sight of a form, and it has a quality-of-printed-character management top problem.
[0008] So that this fault may not occur then, the gap of the paper width guide in two ways (14L, 14R) It is possible to adjust so that it may be located in the outside of the point-angle section of the form which a separation pawl (15L, 15R)

lays on the form installation board 11, to narrow the gap of the paper width guide in two ways (14L, 14R), where a form is laid on the form installation board 11 concerned, and to regulate the crosswise location of a form.

[0009] However, now, although the actuation in which the point-angle section of a form is pushed on from a top, and is located under each tip engagement section 16 of a separation pawl (15L, 15R) becomes unnecessary, the separation pawl (15L, 15R) and the form point-angle section which are moved with the paper width guide in two ways (14L, 14R) interfere in it, and the form point-angle section concerned tends to damage it.

[0010] In addition, the above-mentioned fault also produces the sheet paper cassette of the single-sided reference systems which fix one side of a form width-of-face guide (14L, 14R), are made to move crosswise [form] in another side, and regulate the crosswise location of a form.

[0011] The purpose of this invention is to offer the sheet paper cassette which can set a form quickly, without damage etc. carrying out the point-angle section in view of the above-mentioned situation.

[0012]

[Means for Solving the Problem] A form width-of-face guide of a pair which can location regulate a both-sides edge of a form which a sheet paper cassette concerning invention of claim 1 was prepared a form installation board and crosswise [form] possible [approach and isolation], and was laid on a form installation board, In a sheet paper cassette which was attached in each form width-of-face guide, and engaged with the point-angle section of a form, and equipped one sheet at a time with a disengageable separation pawl for a form at the time of feeding A form tip guide which can location regulate said form tip is prepared in the start section of each of said separation pawl at one. When a gap of each of said form width-of-face guide which corresponds this form tip guide is narrowed from an equivalent for a width-of-face size of a maximum width form and location regulation of the both-sides edge of the minimum width-of-face form is carried out, it is characterized by forming so that it may have form cross direction length which ****s in movement magnitude of each form width-of-face guide concerned.

[0013] A form width-of-face guide of a sheet paper cassette concerning invention of claim 2 of a form installation board and one side of a pair which can location regulate a both-sides edge of a form which it was fixed to a main part of a cassette, and another side was prepared crosswise [form] movable, and was laid on a form installation board, In a sheet paper cassette which was attached in each form width-of-face guide, and engaged with the point-angle section of a form, and equipped one sheet at a time with a disengageable separation pawl for a form at the time of feeding In the start section of said separation pawl attached in a form width-of-face guide of said another side A form tip guide which can location regulate a form tip is prepared in one. This form tip guide A form width-of-face guide of said another side Form cross direction length which ****s in movement magnitude of a form width-of-face guide of the another side concerned when it is made to move crosswise [form] from a location distant from one [said] form width-of-face guide by width-of-face size of a maximum width form and a crosswise location of the minimum width-of-face form is regulated between concerned one form width-of-face guides It is characterized by forming so that it may have.

[0014]

[Function] In invention of claim 1 by the above-mentioned configuration, in setting a form to the main part of a cassette, it adjusts the gap of the paper width guide in two ways first so that it may become an equivalent for the width-of-face size of a maximum width form. Next, on the form installation board during the paper width guide in two ways, a form is laid so that a tip may contact each form tip guide. Under the present circumstances, since between the paper width guides in two ways has opened widely, it can lay quickly, without making a form interfere in the guide concerned.

[0015] Next, the gap of the paper width guide in two ways is narrowed in the condition, and the crosswise location of a form is regulated. The point-angle section of a form seems under the present circumstances, not to interfere with a separation pawl, since location regulation is carried out with the start section of a separation pawl, and really formed form tip guide.

[0016] Thus, since the form point-angle section does not interfere with a separation pawl even if it is easy to lay a form on a form installation board, and is not necessary to correct the vertical physical relationship of the form point-angle section and a separation pawl and it moreover makes the paper width guide in two ways approach, since between the paper width guides in two ways has opened widely, a form can be set quickly, without carrying out the point-angle section for damage etc.

[0017] In invention of claim 2 by the above-mentioned configuration, in setting a form to the main part of a cassette, it adjusts the gap of the paper width guide in two ways first so that it may become an equivalent for the width-of-face size of a maximum width form. Next, on a form installation board, in contact with one form width-of-face guide, one side edge lays a form so that a tip may contact a form tip guide. Under the present circumstances, since between the paper width guides in two ways has opened widely, a form can be quickly laid on a form installation board.

[0018] Next, the form width-of-face guide of another side is turned and moved to one form width-of-face guide in the

condition, and the crosswise location of a form is regulated. The point-angle section of a form seems under the present circumstances, not to interfere with a separation pawl, since location regulation is carried out with the start section of a separation pawl, and really formed form tip guide.

[0019] Therefore, a form can be quickly set like invention of claim 1, without damage etc. carrying out the point-angle section.

[0020]

[Example] Hereafter, the example of this invention is explained with reference to a drawing.

(The 1st example) This sheet paper cassette is made into pin center,large reference systems, and the image formation equipment 1 shown in drawing 3 is equipped with it free [attachment and detachment]. Although the fundamental configuration [the main part 10 of a cassette, the form installation board 11, a form width-of-face guide (14L, 14R), a separation pawl (15L, 15R), etc.] is made to be the same as that of the conventional example (drawing 5 , drawing 6) as shown in drawing 1 - drawing 3 , this sheet paper cassette specifically A form tip guide (21L, 21R) is prepared in a separation pawl (15L, 15R) and one, and it is constituted so that a form can be set quickly, without damage etc. carrying out the point-angle section. in addition, the sign same about the component which is common for the conventional example (drawing 5 , drawing 6) is attached, and simple in the explanation -- or it omits.

[0021] First, while the separation pawl (15L, 15R) is attached in the point of each form width-of-face guide (14L, 14R) through the stud 17, the form tip guide (21L, 21R) is prepared in the start section 17 of the separation pawl (15L, 15R) concerned, and one.

[0022] The form tip guide (21L, 21R) is formed possible [location regulation of the tip of a form where it is laid on the form installation board 11, and the crosswise location is regulated with a form width-of-face guide (14L, 14R)].

[0023] This form tip guide (21L, 21R) The gap of the paper width guide in two ways (14L, 14R) When it narrows from this [of a maximum width form / width-of-face size w plane 1] and the crosswise location of the minimum width-of-face form P0 (width-of-face size w0) is regulated, it is formed so that it may have the form cross direction length (L1, L2) which ****s in the movement magnitude of a form width-of-face guide (14L, 14R).

[0024] In this sheet paper cassette, since the form width-of-face guide (14L, 14R) is considered as the configuration which uses a rack-and-pinion device (illustration abbreviation), and approaches and isolates only the amount of the same length crosswise [form] (the direction of arrow head w), the form cross direction length (L1, L2) of each form tip guide (21L, 21R) is made the same.

[0025] concrete -- a form -- width of face -- a guide (14L, 14R) -- the maximum width -- a form -- width of face -- a size -- w -- a plane 1 -- this -- from -- min -- width of face -- a form -- P -- zero -- the cross direction -- a location -- regulation -- being possible -- a location -- up to -- having moved -- the time -- movement magnitude -- [(w1-w0) -- /-- two --] -- amendment -- an amount (L3, L4) -- having added -- length -- forming -- having -- **** . Even if a form considerable-grade-inclines toward one of form width-of-face guides and is laid on the form installation board 11 during a form width-of-face guide (14L, 14R), the amount of amendments (L3, L4) is selected so that the location regulation of the form tip concerned can be carried out smoothly.

[0026] Next, an operation of this example is explained. In setting a form to the main part 10 of a cassette, it adjusts so that the gap of the paper width guide in two ways (14L, 14R) may serve as this [of a maximum width form / width-of-face size w plane 1] first. Next, on the form installation board 11 during the paper width guide in two ways (14L, 14R), a form is laid so that a tip may contact each form tip guide (21L, 21R). Under the present circumstances, since between the paper width guides in two ways (14L, 14R) has opened widely, it can lay quickly, without making a form interfere in the guide (14L, 14R) concerned.

[0027] Next, the gap of the paper width guide in two ways (14L, 14R) is narrowed in the condition, and the crosswise location of a form is regulated. The point-angle section of a form seems under the present circumstances, not to interfere with a separation pawl (15L, 15R), since location regulation is carried out with the start section 17 of a separation pawl (15L, 15R), and really formed form tip guide (21L, 21R).

[0028] Thus, since between the paper width guides in two ways (14L, 14R) has opened widely It is easy to lay a form on the form installation board 11, and it is not necessary to correct the vertical physical relationship of the form point-angle section and a separation pawl (15L, 15R). And since the form point-angle section does not interfere with a separation pawl (15L, 15R) even if it makes the paper width guide in two ways (14L, 14R) approach, a form can be set quickly, without damage etc. carrying out the point-angle section.

[0029] Carry out a deer, and according to this example, the form tip guide (21L, 21R) which can location regulate a form tip is prepared in the point of each form width-of-face guide (14L, 14R). This form tip guide (21L, 21R) Since it considered as the configuration formed so that it might have the form cross direction length (L1, L2) which ****s in the movement magnitude of a form width-of-face guide (14L, 14R) when the gap of the paper width guide in two ways (14L, 14R) was narrowed from this [of a maximum width form / width-of-face size w plane 1] and location regulation

of the both-sides edge of the minimum width-of-face form P0 was carried out A form can be set quickly and easily, without generating a tip crease etc.

[0030] (The 2nd example) The 2nd example is shown in drawing 4 .

[0031] The sheet paper cassette concerning **** 2 example is made into single-sided reference systems, prepares form tip guide 21R, and it is constituted so that a form can be set quickly, without damage etc. carrying out the point-angle section. in addition, the sign same about the component which is common in the 1st example (drawing 1 - drawing 3) is attached, and simple in the explanation -- or it omits.

[0032] That is, it is prepared of the form width-of-face guides (14L, 14R) of a pair on the other hand (14L), it is fixed to the main part 10 of a cassette, and movable [another side (14R)] to the form cross direction, and is formed possible [location regulation of the both-sides edge of the form laid on the form installation board 11].

[0033] Form tip guide 21R which can location regulate a form tip is prepared in the start section 17 of separation pawl 15R corresponding to form width-of-face guide 14R of another side at one. This form tip guide 21R Form width-of-face guide 14R of another side The form cross direction length L1 which ****s in the movement magnitude of form width-of-face guide 14R of the another side concerned when it is made to move crosswise [form] (the direction of w) from the location which the maximum width form separated from one form width-of-face guide 14L about [width-of-face size w / 1] and the crosswise location of the minimum width-of-face form is regulated between one form width-of-face guide 14L It is formed so that it may have.

[0034] In setting a form to the main part 10 of a cassette, it adjusts so that the gap of the paper width guide in two ways (14L, 14R) may serve as this [of a maximum width form / width-of-face size w plane 1]. Next, on the form installation board 11, in contact with one form width-of-face guide 14L, one side edge lays a form so that a tip may contact form tip guide 21R. Under the present circumstances, since between the paper width guides in two ways (14L, 14R) has opened widely, a form can be quickly laid on the form installation board 11. Next, form width-of-face guide 14R of another side is turned and moved to one form width-of-face guide 14L in the condition, and the crosswise location of a form is regulated. The point-angle section of a form seems under the present circumstances, not to interfere with separation pawl 15R, since location regulation is carried out by the start section 17 of a separation pawl (15L, 15R), and really formed form tip guide 21R.

[0035] Therefore, a form can be quickly set like the sheet paper cassette of the 1st example, without damage etc. carrying out the point-angle section.

[0036]

[Effect of the Invention] According to invention of claim 1, the form tip guide which can location regulate a form tip is prepared in the start section of each separation pawl at one. Since it considered as the configuration formed so that it might have the form cross direction length which ****s in the movement magnitude of a form width-of-face guide when the gap of the paper width guide in two ways was narrowed for a form tip guide from an equivalent for the width-of-face size of a maximum width form and location regulation of the side edge of the minimum width-of-face form was carried out A form can be set quickly, without damage etc. carrying out the point-angle section.

[0037] According to invention of claim 2, in moreover, the start section of the separation pawl attached in the form width-of-face guide of another side The form tip guide which can location regulate a form tip is prepared in one. A form tip guide The form width-of-face guide of another side Since it considered as the configuration formed so that it might have the form cross direction length which ****s in the movement magnitude of the form width-of-face guide of the another side concerned when it was made to move crosswise [form] from the location distant from one form width-of-face guide by the width-of-face size of a maximum width form and location regulation of the minimum width-of-face form was carried out between one form width-of-face guides, a form It can set quickly, without damage etc. carrying out the point-angle section.

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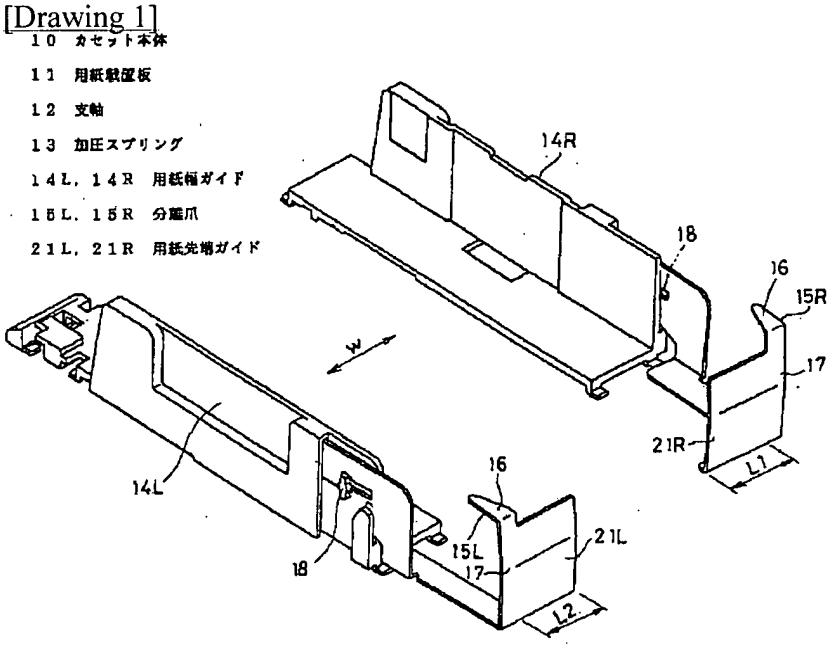
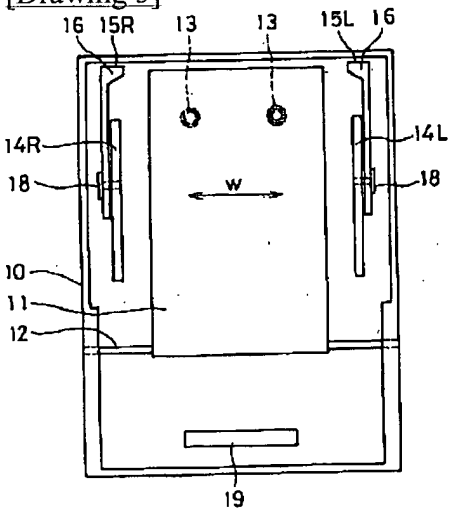
DRAWINGS

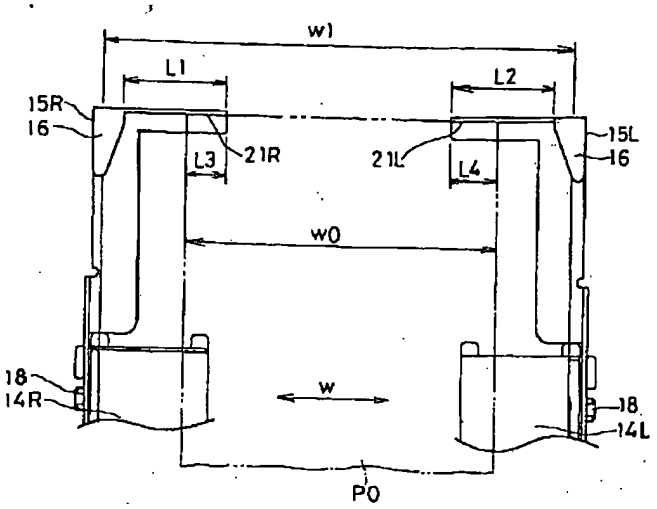
[Drawing 1]



[Drawing 5]



[Drawing 2]



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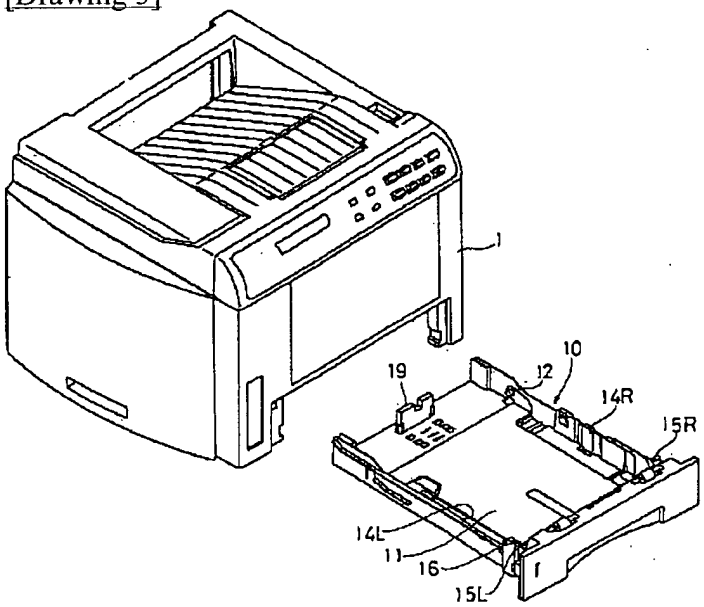
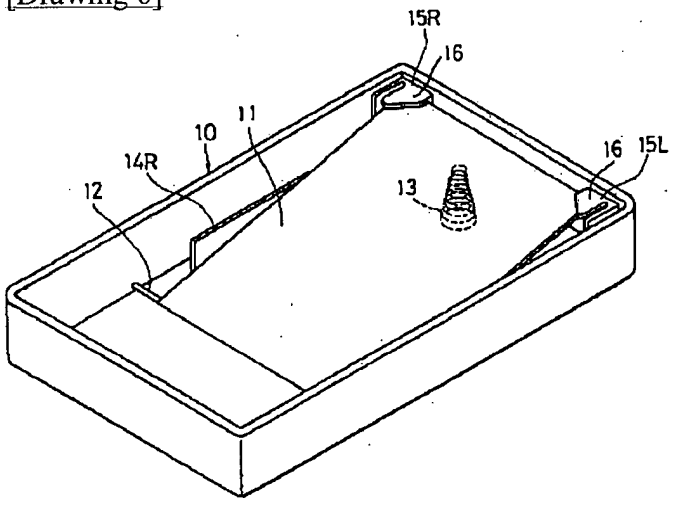
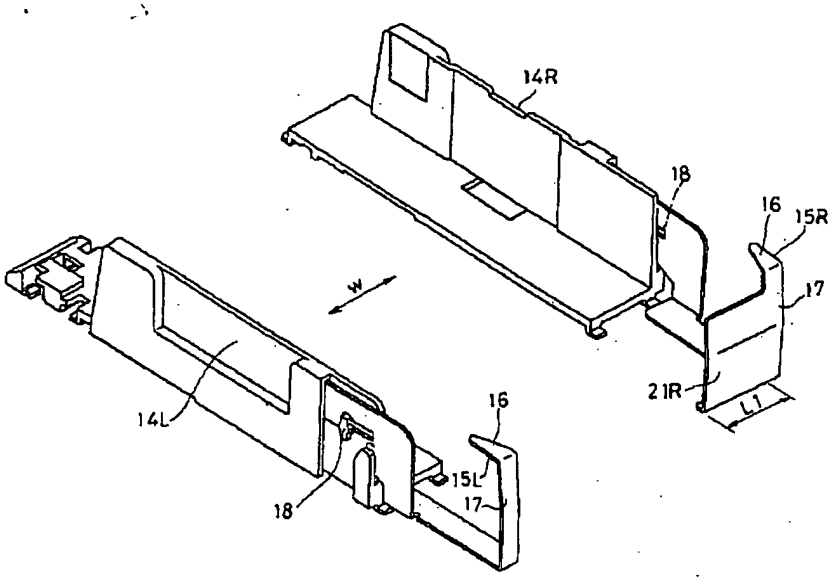


[Drawing 6]



[Drawing 4]



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	1/04	３２４	8712－3F		

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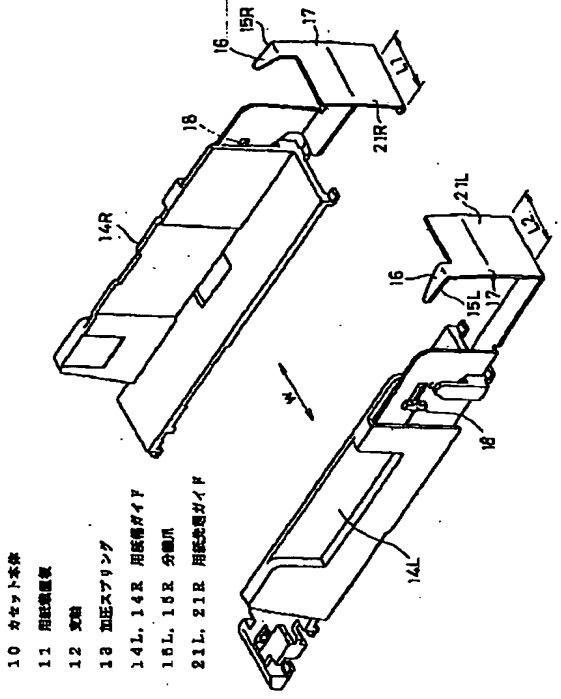
(71)出願人　000003562
株式会社テック
静岡県田方郡大仁町大仁570番地

(72)発明者　川平　昌義
静岡県田方郡大仁町大仁570番地　東京電気株式会社大仁工場内

(74)代理人　弁理士　長島　悦夫　（外１名）

(54)【発明の名称】　給紙カセット

(57)【要約】
【目的】用紙を、先端角部を損傷等させることなく迅速にセットできるようにする。
【構成】　各分離爪（１５Ｌ，１５Ｒ）の立上がり部に、用紙先端を位置規制可能な用紙先端ガイド（２１Ｌ，２１Ｒ）を一体に設け、用紙先端ガイド（２１Ｌ，２１Ｒ）を、両用紙幅ガイド（１４Ｌ，１４Ｒ）の間隔を最大幅用紙の幅寸法相当から狭めて最小幅用紙の側端を位置規制した場合に対応する用紙幅ガイド（１４Ｌ，１４Ｒ）の移動量に相応する用紙幅方向長さを有するように形成した。また、他方の用紙幅ガイド１４Ｒに取付けられた分離爪１５Ｒの立上がり部に、用紙先端を位置規制可能な用紙先端ガイド２１Ｒを一体に設け、用紙先端ガイド２１Ｒを、他方の用紙幅ガイド１４Ｒを一方の用紙幅ガイド１４Ｌから最大幅用紙の幅寸法相当離れた位置から用紙幅方向に移動させて一方の用紙幅ガイド１４Ｌとの間で最小幅用紙を位置規制した場合に当該他方の用紙幅ガイド１４Ｒの移動量に相応する用紙幅方向長さを有するように形成した。



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【特許請求の範囲】

【請求項１】　用紙載置板と、用紙幅方向に接近・離隔可能に設けられ用紙載置板上に載置された用紙の両側端を位置規制可能な一対の用紙幅ガイドと、各用紙幅ガイドに取付けられかつ用紙の先端角部と係合して給紙時に用紙を１枚ずつに分離可能な分離爪とを備えた給紙カセットにおいて、

前記各分離爪の立上がり部に、前記用紙先端を位置規制可能な用紙先端ガイドを一体に設け、該用紙先端ガイドを、対応する前記各用紙幅ガイドの間隔を最大幅用紙の幅寸法相当から狭めて最小幅用紙の両側端を位置規制した場合に当該各用紙幅ガイドの移動量に相応する用紙幅方向長さを有するように形成したことを特徴とする給紙カセット。

【請求項２】　用紙載置板と、一方がカセット本体に固定されかつ他方が用紙幅方向に移動可能に設けられ用紙載置板上に載置された用紙の両側端を位置規制可能な一対の用紙幅ガイドと、各用紙幅ガイドに取付けられかつ用紙の先端角部と係合して給紙時に用紙を１枚ずつに分離可能な分離爪とを備えた給紙カセットにおいて、

前記他方の用紙幅ガイドに取付けられた前記分離爪の立上がり部に、用紙先端を位置規制可能な用紙先端ガイドを一体に設け、該用紙先端ガイドを、前記他方の用紙幅ガイドを前記一方の用紙幅ガイドから最大幅用紙の幅寸法相当離れた位置から用紙幅方向に移動させて当該一方の用紙幅ガイドとの間で最小幅用紙の幅方向位置を規制した場合に当該他方の用紙幅ガイドの移動量に相応する用紙幅方向長さを有するように形成したことを特徴とする給紙カセット。

【発明の詳細な説明】

【０００１】

【産業上の利用分野】本発明は、レーザプリンタおよび複写機等の画像形成装置に適用するのに好適な給紙カセットに関する。

【０００２】

【従来の技術】図５および図６に、センター基準方式の給紙カセットの従来構成を示す。図において、１０はカセット本体で、複数枚の用紙をセット可能に形成されている。このカセット本体１０には、用紙載置板１１，用紙幅ガイド（１４Ｌ，１４Ｒ），分離爪（１５Ｌ，１５Ｒ），用紙後端ガイド１９等が設けられている。ここにおいて、用紙載置板１１は、複数枚の用紙を載置可能に形成されており、支軸１２を介して回動自在に設けられている。この用紙載置板１１は、加圧スプリング１３によって付勢されて、分離爪（１５Ｌ，１５Ｒ）の各先端係合部１６へ向けて付勢されている。

【０００３】また、用紙載置板１１上に載置された用紙は、一対の用紙幅ガイド（１４Ｌ，１４Ｒ）によって、幅方向位置（図５中左右方向位置）が規制される。両用紙幅ガイド（１４Ｌ，１４Ｒ）は、公知のラックピニオン機構（図示省略）によって用紙幅方向（矢印ｗ方向）に同一長さ量だけ接近・離隔可能に設けられている。また、分離爪（１５Ｌ，１５Ｒ）は、用紙載置板１１上の複数用紙のうちの最上位用紙の先端角部と当接係合する先端係合部１６を有し、給紙時に複数用紙を１枚ずつに分離可能に形成されている。具体的には、分離爪（１５Ｌ，１５Ｒ）は、対応する用紙幅ガイド（１４Ｌ，１４Ｒ）にスタッド１８を介して回動可能に取り付けられている。

2

【０００４】また、用紙後端ガイド１９は、用紙載置板１１上に載置された用紙の後端を位置規制するもので、用紙サイズに応じてカセット本体１０の長手方向位置を変更可能に設けられている。

【０００５】カセット本体１０に用紙をセットする場合には、当該用紙のサイズ（幅寸法，長さ寸法）に応じて予め両用紙幅ガイド（１４Ｌ，１４Ｒ）の間隔を調整するとともに、用紙後端ガイド１９の取付位置を調整する。次に、用紙を各ガイド（１４Ｌ，１４Ｒ，１９）と慎重に位置合せしつつ用紙載置板１１上に載置し、かつ用紙先端角部を分離爪（１５Ｌ，１５Ｒ）の上方から押して当該分離爪（１５Ｌ，１５Ｒ）の各先端係合部１６の下方に位置させる。

【０００６】こうして、用紙がセットされた給紙カセットを画像装置に装着して給紙する場合には、用紙載置板１１上に載置された複数用紙のうち最上位の用紙は、圧接された給紙ローラ（図示省略）によって送り付勢され、分離爪（１５Ｌ，１５Ｒ）によって２枚目以下の用紙と分離され送り出される。

【０００７】

【発明が解決しようとする課題】ところで、上記した給紙カセットでは、用紙載置板１１上に載置された用紙の先端角部を分離爪（１５Ｌ，１５Ｒ）の上方から押して、当該分離爪（１５Ｌ，１５Ｒ）の各先端係合部１６の下方に位置させる場合に、用紙の先端角部が折れ曲がったり傷が付きやすい。この用紙の先端角部の損傷等に起因して給紙する際にジャム等が発生することがある。また、用紙の先端角部が損傷等することは用紙の美観を損ねることにもなり、印字品質管理上問題がある。

【０００８】そこで、かかる不具合が発生しないように、両用紙幅ガイド（１４Ｌ，１４Ｒ）の間隔を、分離爪（１５Ｌ，１５Ｒ）が用紙載置板１１上に載置する用紙の先端角部の外側に位置するように調整し、当該用紙載置板１１上に用紙を載置した状態で、両用紙幅ガイド（１４Ｌ，１４Ｒ）の間隔を狭めて用紙の幅方向位置を規制することが考えられる。

【０００９】しかし、これでは、用紙の先端角部を上から押して分離爪（１５Ｌ，１５Ｒ）の各先端係合部１６の下方に位置させる動作は必要なくなるものの、両用紙幅ガイド（１４Ｌ，１４Ｒ）とともに移動される分離爪（１５Ｌ，１５Ｒ）と用紙先端角部とが干渉し、当該用

紙先端角部が損傷しやすい。

【００１０】なお、上記した不具合は、用紙幅ガイド（１４Ｌ，１４Ｒ）の一方を固定し他方を用紙幅方向に移動させて用紙の幅方向位置を規制する片側基準方式の給紙カセットでも生じる。

【００１１】本発明の目的は、上記事情に鑑み、用紙を、先端角部を損傷等させることなく迅速にセットすることができる給紙カセットを提供することにある。

【００１２】

【課題を解決するための手段】請求項１の発明に係る給紙カセットは、用紙載置板と、用紙幅方向に接近・離隔可能に設けられ用紙載置板上に載置された用紙の両側端を位置規制可能な一対の用紙幅ガイドと、各用紙幅ガイドに取付けられかつ用紙の先端角部と係合して給紙時に用紙を１枚ずつに分離可能な分離爪とを備えた給紙カセットにおいて、前記各分離爪の立上がり部に、前記用紙先端を位置規制可能な用紙先端ガイドを一体に設け、該用紙先端ガイドを、対応する前記各用紙幅ガイドの間隔を最大幅用紙の幅寸法相当から狭めて最小幅用紙の両側端を位置規制した場合に当該各用紙幅ガイドの移動量に相応する用紙幅方向長さを有するように形成したことを特徴とする。

【００１３】請求項２の発明に係る給紙カセットは、用紙載置板と、一方がカセット本体に固定されかつ他方が用紙幅方向に移動可能に設けられ用紙載置板上に載置された用紙の両側端を位置規制可能な一対の用紙幅ガイドと、各用紙幅ガイドに取付けられかつ用紙の先端角部と係合して給紙時に用紙を１枚ずつに分離可能な分離爪とを備えた給紙カセットにおいて、前記他方の用紙幅ガイドに取付けられた前記分離爪の立上がり部に、用紙先端を位置規制可能な用紙先端ガイドを一体に設け、該用紙先端ガイドを、前記他方の用紙幅ガイドを前記一方の用紙幅ガイドから最大幅用紙の幅寸法相当離れた位置から用紙幅方向に移動させて当該一方の用紙幅ガイドとの間で最小幅用紙の幅方向位置を規制した場合に当該他方の用紙幅ガイドの移動量に相応する用紙幅方向長さを有するように形成したことを特徴とする。

【００１４】

【作用】上記構成による請求項１の発明では、用紙をカセット本体にセットする場合には、まず両用紙幅ガイドの間隔を最大幅用紙の幅寸法相当となるように調整する。次に、両用紙幅ガイド間の用紙載置板上に、用紙を、先端が各用紙先端ガイドに当接するように載置する。この際、両用紙幅ガイド間が広く開けられているので、用紙を当該ガイドに干渉させることなく迅速に載置することができる。

【００１５】次に、その状態で両用紙幅ガイドの間隔を狭めて用紙の幅方向位置を規制する。この際、用紙の先端角部は、分離爪の立上がり部と一体形成された用紙先端ガイドによって位置規制されているので、分離爪と干渉するようなことはない。

【００１６】このように、両用紙幅ガイド間が広く開けられているので、用紙載置板上に用紙を載置しやすく、かつ用紙先端角部と分離爪との上下位置関係を直す必要もなく、しかも両用紙幅ガイドを接近させても用紙先端角部は分離爪と干渉しないので、用紙を先端角部を損傷等させることなく迅速にセットすることができる。

【００１７】上記構成による請求項２の発明では、用紙をカセット本体にセットする場合には、まず両用紙幅ガイドの間隔を最大幅用紙の幅寸法相当となるように調整する。次に、用紙載置板上に、用紙を、一側端が一方の用紙幅ガイドに当接しかつ先端が用紙先端ガイドに当接するように載置する。この際、両用紙幅ガイド間が広く開けられているので、用紙を迅速に用紙載置板上に載置することができる。

【００１８】次に、その状態で他方の用紙幅ガイドを、一方の用紙幅ガイドに向けて移動させて用紙の幅方向位置を規制する。この際、用紙の先端角部は、分離爪の立上がり部と一体形成された用紙先端ガイドによって位置規制されているので、分離爪と干渉するようなことはない。

【００１９】したがって、請求項１の発明と同様に、用紙を先端角部を損傷等させることなく迅速にセットすることができる。

【００２０】

【実施例】以下、本発明の実施例を図面を参照して説明する。

（第１実施例）本給紙カセットは、センター基準方式とされており、図３に示す画像形成装置１に着脱自在に装着されている。具体的には、本給紙カセットは、図１～図３に示す如く、基本的構成〔カセット本体１０，用紙載置板１１，用紙幅ガイド（１４Ｌ，１４Ｒ），分離爪（１５Ｌ，１５Ｒ）等〕が従来例（図５，図６）と同様とされているが、用紙先端ガイド（２１Ｌ，２１Ｒ）を分離爪（１５Ｌ，１５Ｒ）と一体に設け、用紙を先端角部を損傷等させることなく迅速にセットできるように構成されている。なお、従来例（図５，図６）と共通する構成要素については同一の符号を付し、その説明を簡略または省略する。

【００２１】まず、各用紙幅ガイド（１４Ｌ，１４Ｒ）の先端部には、分離爪（１５Ｌ，１５Ｒ）がスタッド１７を介して取り付けられているとともに、当該分離爪（１５Ｌ，１５Ｒ）の立上がり部１７と一体に用紙先端ガイド（２１Ｌ，２１Ｒ）が設けられている。

【００２２】用紙先端ガイド（２１Ｌ，２１Ｒ）は、用紙載置板１１上に載置されかつ用紙幅ガイド（１４Ｌ，１４Ｒ）によって幅方向位置が規制されている用紙の先端を位置規制可能に形成されている。

【００２３】この用紙先端ガイド（２１Ｌ，２１Ｒ）は、両用紙幅ガイド（１４Ｌ，１４Ｒ）の間隔を最大幅

用紙の幅寸法ｗ１相当から狭めて最小幅用紙Ｐ０（幅寸法ｗ０）の幅方向位置を規制した場合に対応する用紙幅ガイド（１４Ｌ，１４Ｒ）の移動量に相応する用紙幅方向長さ（Ｌ１，Ｌ２）を有するように形成されている。

【００２４】本給紙カセットでは、用紙幅ガイド（１４Ｌ，１４Ｒ）がラック・ピニオン機構（図示省略）を用いて同一長さ量だけ用紙幅方向（矢印ｗ方向）に接近・離隔する構成とされているので、各用紙先端ガイド（２１Ｌ，２１Ｒ）の用紙幅方向長さ（Ｌ１，Ｌ２）は同一とされている。

【００２５】具体的には、用紙幅ガイド（１４Ｌ，１４Ｒ）が、最大幅用紙の幅寸法ｗ１相当から最小幅用紙Ｐ０の幅方向位置を規制可能な位置まで移動した際の移動量［（ｗ１－ｗ０）／２］に補正量（Ｌ３，Ｌ４）を加えた長さに形成されている。補正量（Ｌ３，Ｌ４）は、用紙幅ガイド（１４Ｌ，１４Ｒ）間の用紙載置板１１上に用紙がいずれかの用紙幅ガイドに相当程度偏って載置されても当該用紙先端を円滑に位置規制できるように選定される。

【００２６】次に、この実施例の作用について説明する。用紙をカセット本体１０にセットする場合には、まず両用紙幅ガイド（１４Ｌ，１４Ｒ）の間隔が最大幅用紙の幅寸法ｗ１相当となるように調整する。次に、両用紙幅ガイド（１４Ｌ，１４Ｒ）間の用紙載置板１１上に、用紙を、先端が各用紙先端ガイド（２１Ｌ，２１Ｒ）に当接するように載置する。この際、両用紙幅ガイド（１４Ｌ，１４Ｒ）間が広く開けられているので、用紙を当該ガイド（１４Ｌ，１４Ｒ）に干渉させることなく迅速に載置することができる。

【００２７】次に、その状態で両用紙幅ガイド（１４Ｌ，１４Ｒ）の間隔を狭めて用紙の幅方向位置を規制する。この際、用紙の先端角部は、分離爪（１５Ｌ，１５Ｒ）の立上がり部１７と一体形成された用紙先端ガイド（２１Ｌ，２１Ｒ）によって位置規制されているので、分離爪（１５Ｌ，１５Ｒ）と干渉するようなことはない。

【００２８】このように、両用紙幅ガイド（１４Ｌ，１４Ｒ）間が広く開けられているので、用紙載置板１１上に用紙を載置しやすく、かつ用紙先端角部と分離爪（１５Ｌ，１５Ｒ）との上下位置関係を直す必要もなく、しかも両用紙幅ガイド（１４Ｌ，１４Ｒ）を接近させても用紙先端角部は分離爪（１５Ｌ，１５Ｒ）と干渉しないので、用紙を先端角部を損傷等させることなく迅速にセットすることができる。

【００２９】しかして、この実施例によれば、各用紙幅ガイド（１４Ｌ，１４Ｒ）の先端部に用紙先端を位置規制可能な用紙先端ガイド（２１Ｌ，２１Ｒ）を設け、この用紙先端ガイド（２１Ｌ，２１Ｒ）を、両用紙幅ガイド（１４Ｌ，１４Ｒ）の間隔を最大幅用紙の幅寸法ｗ１相当から狭めて最小幅用紙Ｐ０の両側端を位置規制した場合に対応する用紙幅ガイド（１４Ｌ，１４Ｒ）の移動量に相応する用紙幅方向長さ（Ｌ１，Ｌ２）を有するように形成した構成としたので、用紙を先端折れ等を発生させることなく迅速かつ容易にセットすることができる。

【００３０】（第２実施例）第２実施例は、図４に示される。

【００３１】本第２実施例に係る給紙カセットは、片側基準方式とされており、用紙先端ガイド２１Ｒを設け、用紙を先端角部を損傷等させることなく迅速にセットできるように構成されている。なお、第１実施例（図１～図３）と共通する構成要素については同一の符号を付し、その説明を簡略または省略する。

【００３２】すなわち、一対の用紙幅ガイド（１４Ｌ，１４Ｒ）のうちの一方（１４Ｌ）がカセット本体１０に固定されかつ他方（１４Ｒ）が用紙幅方向に移動可能に設けられ，用紙載置板１１上に載置された用紙の両側端を位置規制可能に形成されている。

【００３３】他方の用紙幅ガイド１４Ｒに対応した分離爪１５Ｒの立上がり部１７には、用紙先端を位置規制可能な用紙先端ガイド２１Ｒが一体に設けられている。この用紙先端ガイド２１Ｒは、他方の用紙幅ガイド１４Ｒを一方の用紙幅ガイド１４Ｌから最大幅用紙の幅寸法ｗ１相当離れた位置から用紙幅方向（ｗ方向）に移動させて一方の用紙幅ガイド１４Ｌとの間で最小幅用紙の幅方向位置を規制した場合に当該他方の用紙幅ガイド１４Ｒの移動量に相応する用紙幅方向長さＬ１を有するように形成されている。

【００３４】用紙をカセット本体１０にセットする場合には、両用紙幅ガイド（１４Ｌ，１４Ｒ）の間隔が最大幅用紙の幅寸法ｗ１相当となるように調整する。次に、用紙載置板１１上に、用紙を、一側端が一方の用紙幅ガイド１４Ｌに当接しかつ先端が用紙先端ガイド２１Ｒと当接するように載置する。この際、両用紙幅ガイド（１４Ｌ，１４Ｒ）間が広く開けられているので、用紙を迅速に用紙載置板１１上に載置することができる。　次に、その状態で他方の用紙幅ガイド１４Ｒを、一方の用紙幅ガイド１４Ｌに向けて移動させて用紙の幅方向位置を規制する。この際、用紙の先端角部は、分離爪（１５Ｌ，１５Ｒ）の立上がり部１７と一体形成された用紙先端ガイド２１Ｒによって位置規制されているので、分離爪１５Ｒと干渉するようなことはない。

【００３５】したがって、第１実施例の給紙カセットと同様に、用紙を先端角部を損傷等させることなく迅速にセットすることができる。

【００３６】

【発明の効果】請求項１の発明によれば、各分離爪の立上がり部に、用紙先端を位置規制可能な用紙先端ガイドを一体に設け、用紙先端ガイドを、両用紙幅ガイドの間隔を最大幅用紙の幅寸法相当から狭めて最小幅用紙の側

7

端を位置規制した場合に対応する用紙幅ガイドの移動量に相応する用紙幅方向長さを有するように形成した構成としたので、用紙を、先端角部を損傷等させることなく迅速にセットすることができる。

【００３７】また、請求項２の発明によれば、他方の用紙幅ガイドに取付けられた分離爪の立上がり部に、用紙先端を位置規制可能な用紙先端ガイドを一体に設け、用紙先端ガイドを、他方の用紙幅ガイドを一方の用紙幅ガイドから最大幅用紙の幅寸法相当離れた位置から用紙幅方向に移動させて一方の用紙幅ガイドとの間で最小幅用紙を位置規制した場合に当該他方の用紙幅ガイドの移動量に相応する用紙幅方向長さを有するように形成した構成としたので、用紙を、先端角部を損傷等させることなく迅速にセットすることができる。

【図面の簡単な説明】

【図１】本発明の第１実施例を説明するための斜視図である。

8

【図２】同じく、用紙先端ガイドと用紙との位置関係を説明するための平面図である。

【図３】同じく、本給紙カセットと，本給紙カセットが装着される画像形成装置を示す斜視図である。

【図４】本発明の第２実施例を説明するための斜視図である。

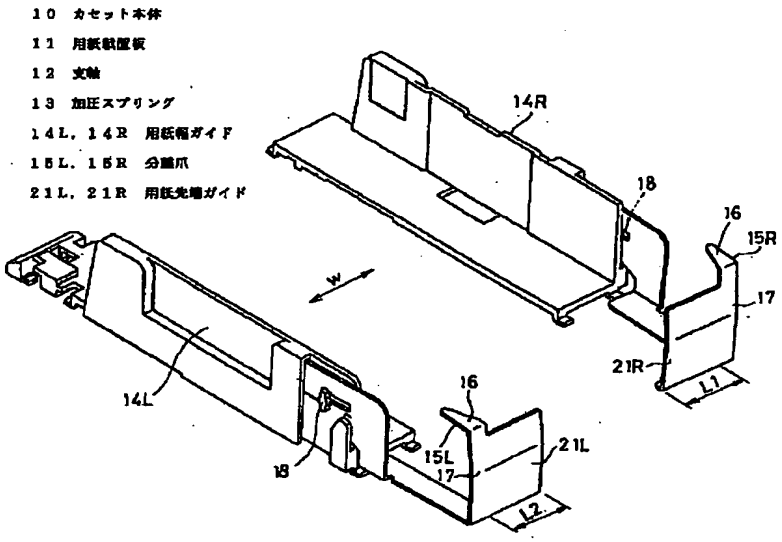
【図５】給紙カセットの従来構成を説明するための平面図である。

【図６】同じく、斜視図である。

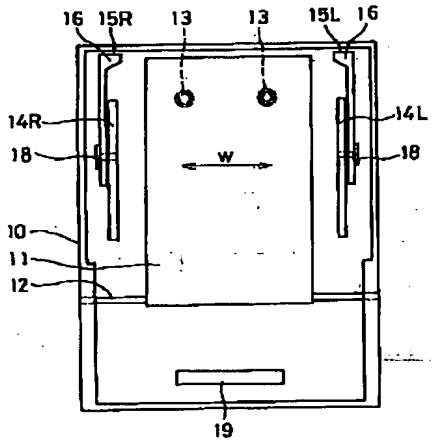
【符号の説明】

１０　カセット本体
１１　用紙載置板
１２　支軸
１３　加圧スプリング
１４Ｌ，１４Ｒ　用紙幅ガイド
１５Ｌ，１５Ｒ　分離爪
２１Ｌ，２１Ｒ　用紙先端ガイド

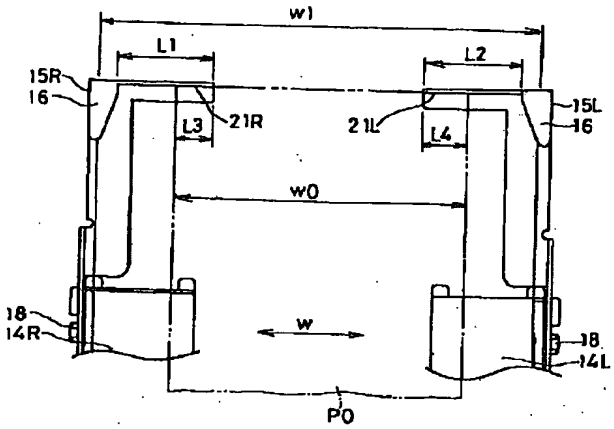
【図１】



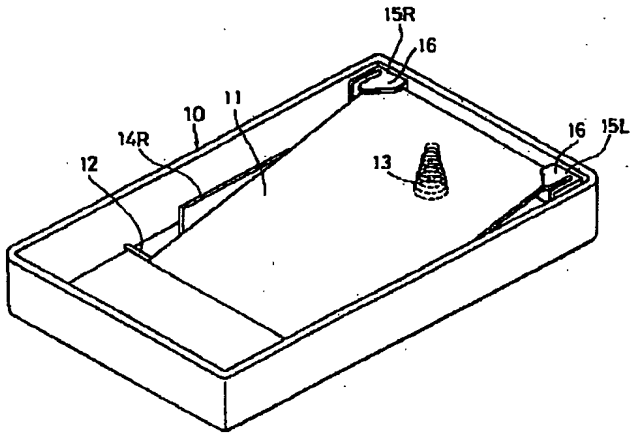
【図５】



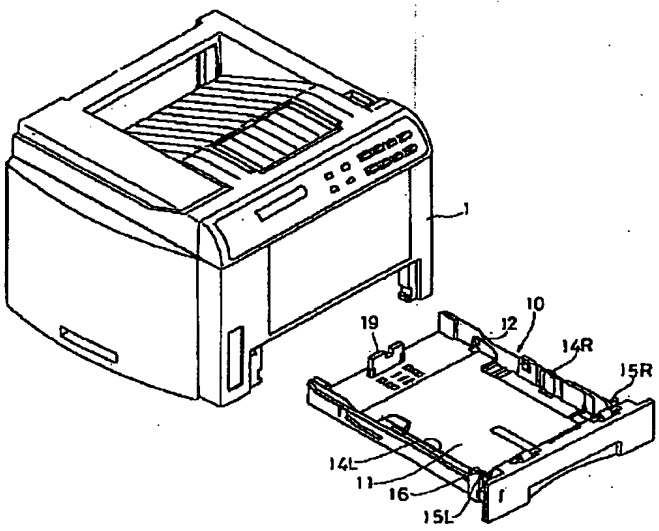
【図２】


w1
L1
L2
15R
16
15L
16
L3
21R
21L
L4
w0
18
14R
w
18
14L
P0

【図６】


15R
16
10
11
14R
12
13
16
15L

【図３】


1
19
12
10
14R
15R
14L
11
16
15L

【図４】